



March 1, 2017

Modernizing Western Water and Power Infrastructure in the 21st Century

Subcommittee on Water, Power and Oceans, Committee on Natural Resources, United States House of Representatives, One Hundred Fifteenth Congress, First Session

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Before the U.S. House of Representatives
Committee on Natural Resources
Subcommittee on Water, Power and Oceans

Oversight Hearing Entitled
“Modernizing Western Water and Power Infrastructure in the 21st Century”

Testimony of
Andrew J. Colosimo
Colorado Springs Utilities

March 1, 2017

Thank you Chairman Lamborn, Ranking Member Huffman, and Members of the House Subcommittee on Water, Power and Oceans for the opportunity to testify at this Oversight Hearing entitled “Modernizing Western Water and Power Infrastructure in the 21st Century”.

My name is Andrew Colosimo, the Government and Corporate Affairs Manager for Colorado Springs Utilities. For over a century, Colorado Springs Utilities has consistently delivered services to meet the needs of its residential, commercial, and industrial customers. As a community-owned, four service municipal utility, our focus is providing safe, reliable, competitively-priced electric, natural gas, water and wastewater services to our citizen owners and customers. I am also on the board of directors of the National Water Resources Association and believe that many of the comments I make today are reflective of issues faced by water and power providers throughout the west.

The Colorado Springs Utilities water system serves over 470,000 people across a 200 square mile service area, with an elevation change of nearly 2,000 feet from the lowest to highest service points. The water system includes 25 reservoirs, 38 storage tanks, 6 water treatment facilities and over 2,000 miles of water mains. Source water is diverted from over 100 miles outside the City.

Colorado Springs is not located on a major river, it must rely on water delivered from distant watersheds. Currently, between 60 and 70 percent of the Utilities’ water supply originates from the first use and subsequent reuse of water obtained from Colorado River headwaters through four transbasin diversions. These supplies are transported into the Arkansas River Basin and delivered to storage and treatment facilities via four raw water pipeline systems.

Providing and maintaining a dependable water supply for Colorado Springs residents and businesses is one of our community’s greatest challenges. Continuous, long-term water planning is the reason Colorado Springs has an excellent and reliable water system today that supports our economy and quality of life.

As we look to the future, I would like to bring my testimony back to the topic of this hearing and discuss how to modernize western water and power infrastructure. As Congress and the Administration consider an infrastructure package it is important that a strong commitment to water infrastructure is made. Water infrastructure is vital to provide safe secure domestic water supplies for human health and safety as well as for power generation, agriculture, and manufacturing.

Regulatory Reform

The federal regulatory regime that impacts the development, distribution and management of the nation's water resources is outdated and is difficult to apply to current on-the-ground realities. These regulations, while well intended, are often overly burdensome with little environmental or economic benefit.

An example of this regulatory burden is Colorado Springs Utilities' recent experience during the completion of our Southern Delivery System (SDS). The \$825 million Southern Delivery System is a regional project that brings water from Pueblo Reservoir to Colorado Springs and our partner communities, Fountain, Security and Pueblo West. The project included 50 miles of 66 inch diameter pipe, three pump stations, and a water treatment plant.

Before one shovel hit the ground, SDS required extensive permitting and approvals. Public involvement and communication efforts played a key role in securing the more than 200 permits and approvals needed to start construction. In addition to the EIS, required under the National Environmental Policy Act, SDS required dozens of other permits and approvals, including local land-use permits, a 404 permit required under the Clean Water Act, state water quality 401 certification, and a state fish and wildlife mitigation plan.

Eight years and roughly \$17 million were required to complete the NEPA process and related negotiations with the Bureau of Reclamation, while an additional \$25 million was spent on meeting other permitting mandates. Over \$160 million was devoted to mitigation and permit commitments, many local in nature. It required an additional six years to build the project. While we were successful in completing our project, we need to improve the permitting process from both a time and cost perspective. It is important to recognize that we did not use any state or federal taxpayer dollars to pay for SDS – we used a combination of issuing municipal bonds and raising our utility rates to pay for the project.

We applaud the efforts of Congress to improve the permitting process as was demonstrated by the bipartisan support and passage of the FAST Act which seeks to improve the permitting process for major infrastructure projects. Improving coordination between federal agencies and non-federal government agencies, increasing transparency, and enhancing early stakeholder engagement are all improvements to the regulatory regime. While many of the elements in the FAST Act are in the early stages of implementation, we need to see this process continue at a more accelerated pace and expanded to include water resources development projects. Further, the recent Executive Order by President Trump entitled "Expediting

Environmental Reviews and Approvals for High Priority Infrastructure Projects” places increased recognition on the importance of federal agencies completing environmental reviews in a timely manner.

We encourage Congress to build on these successes and pursue additional legislative remedies to further streamline the process for upgrading and replacing infrastructure, with particular emphasis on realizing efficiencies in the regulatory oversight and permitting processes. This could be done by: requiring a cost/benefit analysis in the establishment and implementation of regulatory requirements; promoting greater delegation of NEPA management and implementation to the states; requiring a single lead federal agency on projects requiring NEPA review – but we need to make sure it is the right agency leading the review and that the agency has adequate resources to complete the job in a timely manner – some agencies are lacking the expertise to oversee large infrastructure projects; further timelines need to be required for federal agency review and decision making, while limiting sequential agency reviews of projects; and ensuring enhanced data collection, analysis and sharing processes, with efficient utilization of all existing data, in the completion of permit related studies.

Watershed Health

Protecting the headwaters of the West and securing favorable water flows are foundational purposes of the National Forest System. Unfortunately, today the unhealthy state of these forests has led to catastrophic wildfires that threaten the sustainability and quality of drinking water for tens of millions of residents of the western United States. Current laws and regulations must be improved to reflect the urgency of reducing fire risk in western forests and to recognize that catastrophic wildfire is the greatest risk to forest ecosystems and species, as well as to water quality and water supplies originating from our headwaters. Wildfire events create erosion, sedimentation, and water quality problems that negatively impact water storage and delivery infrastructure.

It is imperative that Congress address both funding and regulatory forest health challenges. Congress must provide adequate and stable funding to the federal agencies to support sustained development and implementation of programs that improve the condition, trend, and resiliency of federally managed headwaters and to allow an end to the current practice of “fire borrowing” that annually diverts funds originally destined toward the needed management activities. Millions of acres of national forests in the West are overgrown and in need of immediate large scale tree harvesting to prevent catastrophic wildfire and its costly impacts to municipal watersheds. For post-fire forest restoration actions, time is of the essence to protect the natural and manmade infrastructure of our watersheds. Regulations should be streamlined and weigh the overall long-term health of the landscape against any short-term impacts of mitigation actions. Lastly, we need to expand collaboration on all environmental reviews, not just the large infrastructure projects. The current structure fails to provide a venue to promote solutions.

Developing Resilience to Natural Environmental Challenges

Changing natural conditions present an extreme challenge to western water providers. Drought, floods, fire, extreme weather events, warming water temperatures and other such variations in environmental conditions are occurring with increased frequency and unpredictability.

Because water supply in the West depends on runoff from snowmelt, water providers are being forced to rethink the way their systems operate. The runoff season is already beginning and ending earlier in the year, and system yields can fluctuate dramatically. Each new flood event demonstrates the vulnerability of existing infrastructure designed in reliance on historic hydrology, which is no longer a dependable predictor of the future. Increased storage to meet demands in times of shortage is essential, as is adequate funding to insure that existing infrastructure is properly maintained to insure its continued reliable functioning.

To address these challenges, water providers will need to ensure that their water supply planning, infrastructure and operational decisions are more resilient to change. Assistance from the federal government in the form of risk management, research and shared resources is essential. Federal adaptation strategies, plans and investments should be developed in close consultation and in partnership with western water providers. Congress needs to encourage the federal water agencies to evaluate existing reservoirs for storage opportunities including full utilization of excess capacity, reallocation of existing space, and enlargement. Federal regulatory programs need to be flexible enough to accommodate such strategies, and to do so at a cost that beneficiaries can afford. Federal agencies must foster these strategies with a sense of urgency, increase transparency and engage in timely and thoughtful revision of policies and regulations.

Building and Rebuilding Water System Infrastructure

Much of our nation's water infrastructure is nearing the end of its design life. An estimated 240,000 water main breaks occur each year in the United States. Assuming that each of those pipes would need to be replaced, the cost over the coming decades could reach more than \$1 trillion. Capital investment needs for the nation's wastewater and stormwater systems are also estimated to total \$298 billion over the next 20 years. The construction of water infrastructure will generate economic growth and jobs, but necessitates significant "up-front" monies to meet capital and permitting costs. Further, regulatory requirements can both drive infrastructure investments that may not be warranted from a risk or cost/benefit perspective, e.g., certain enhanced treatment techniques, while impeding progress on the construction, repair and replacement of infrastructure that are required.

A variety of mechanisms are needed to pay for the costs of necessary infrastructure. Congress needs to ensure that tax-exempt financing continues to be available for municipalities and other governmental entities. We also need to explore the expanded use of low interest federal loans, and direct contributions through federal appropriation to help pay for key infrastructure

projects. Lastly, I would strongly encourage Congress to include the needs of the western water and power community in any infrastructure legislation.

Cost is an important consideration because it is tied to the delivery of water, one of the most basic resources necessary for human and community health. We are responsible members of the regulated community and recognize the need for reasonable regulation. However, a thoughtful effort to improve the current regulatory regime is necessary.

That said, Colorado Springs Utilities and other water providers are prepared to partner with the federal agencies and Congress to address the water and power infrastructure needs. Preserving safe, reliable and affordable water supplies for consumers requires a strategy that respects local water resource management decisions; provides regulatory flexibility consistent with the realities of changing environmental conditions; bolsters technical and financial resources; and achieves an appropriate cost/benefit balance. We look forward to working with you on these important issues.



Testimony

**Mr. Andrew Fecko
Director of Resource Development
Placer County Water Agency
Auburn, California**

Presented Before

**Chairman Doug Lamborn
Subcommittee on Water, Power and Oceans
U.S. House of Representatives**

March 1, 2017

Introduction

Thank you Chairman Lamborn, Ranking Member Huffman and members of the House Subcommittee on Water, Power and Oceans, for the opportunity to testify on for critical infrastructure and regulatory streamlining necessary to promote public safety and water supply reliability for farms, cities, homes and businesses throughout the West.

My name is Andrew Fecko and I serve as the Director of Resource Development for Placer County Water Agency (PCWA). I am also a member of the National Water Resources Association's (NWRA) Federal Affairs Committee. I help operate PCWA's water, energy and recreation infrastructure in the heart of California's Sierra Nevada mountains.

About PCWA

Placer County Water Agency owns and operates the Middle Fork American River Project, providing water supplies, hydroelectric power, public recreational opportunities and environmental stewardship for the people of Placer County and the region. The people of Placer County built the Middle Fork Project in the 1960s to develop local water resources for the long-term public benefit. Placer County Water Agency was created to ensure, and remains committed to supporting, diligent management of those water resources.

About NWRA

NWRA is a nonpartisan, nonprofit federation made up of agricultural and municipal water providers, state associations, and individuals dedicated to the conservation, enhancement and efficient management of our nation's most important natural resource, water. NWRA represents a diverse group of agricultural and municipal water users and water providers from throughout the American West and portions of the Southern United States. Our members provide clean water to millions of individuals, families, agricultural producers and other businesses in a manner that supports communities, the economy and the environment.

Historical Perspective

As a matter of national policy, the United States – through the Bureau of Reclamation and the Corps of Engineers – constructed an extraordinary system of multi-purpose water resource projects throughout the West. The purpose of this national effort, which began more than 100 years ago, was to promote economic development and protect farms and communities from catastrophic flood events. Most of this federal infrastructure was completed and in service by the late 1960s, including Bonneville, Grand Coulee and other iconic dams on the Columbia River; Hoover and Glen Canyon on the Colorado River, the Pick-Sloan Project on the Missouri River, and the Central Valley Project in California to name a few. Since that time, several fundamental changes have occurred that significantly increase the challenges of operating our national water infrastructure.

The Challenges

Increasing Demand. Between 1960 and 2015, the total population of the 17 Western “Reclamation” states increased more than 250% from 44 million to 111.7 million. The population of California alone increased from 15.7 million to 39 million during that period. If we assume a conservative average of 100 gallons per person per day to preserve human health and safety, this represents an increase in demand of 2.6 million acre-feet annually. That’s approximately the entire working capacity of Shasta Reservoir in Northern California, and does not include the water necessary to grow the crops to feed this new population

The upward trend in demand will continue. According to the Center for Regional Change at the University of California Davis, California’s population will increase another 11 million people by 2050 to a total population of 50 million. This will increase household water demand yet another 1.25 million acre-feet annually.

Western Hydrology. The climate of the western states is characterized by drought and flood cycles; it is precisely why Congress invested in multipurpose water projects in the past. While this year’s hydrology has relieved California of drought conditions for now, our bounty is now testing flood control systems throughout the State. Predictions about the West’s climate future abound, and span a wide range of possible outcomes. One thing is certain, the existing water and energy infrastructure will continue to be relied upon to mitigate fluctuating drought and flood cycles West-wide.

Environmental Protection. The National Environmental Policy Act of 1969 (NEPA), and the Endangered Species Act of 1973 (ESA) and other major environmental-related statutes were enacted after most Federal water resources projects in the West were already completed. In addition, project-specific legislation has specifically required reallocation of project supply for environmental protection. For example, the 1992 Central Valley Project Improvement Act (CVPIA) reallocated 800,000 acre-feet annually of project yield to fish and wildlife restoration. Reoperation of existing federal projects to conform to these statutes has had the effect of reducing project supply available for farms, cities and businesses.

Aging Infrastructure. The nation’s investment in water and power infrastructure led to tremendous economic growth in the West, and created an agricultural resource that continues to feed the nation, and indeed the world. However, many of our federally owned water and flood projects are nearing a century old. These facilities require significant investments by Congress to renew and replace aging infrastructure. Water and power users throughout the West will continue to pay for needed maintenance and improvements through our water and power contracts as long as these projects can perform on behalf of their customers. CVP customers, for instance, have historically repaid 80 cents of every dollar appropriated by Congress to Reclamation through contractual mechanisms.

Project Repayment. As water and energy supply reliability from federal projects has fallen, revenues from customers have fallen proportionally. At the same time, costs continue to rise due to aging infrastructure and environmental concerns. Smaller contractual deliveries and high fixed costs mean each unit of water and power becomes more expensive. These factors are leading to increasing fears of financial insolvency for many of the West's federal water and power projects as more and more costs are concentrated onto fewer and fewer beneficiaries.

Local Response

The cumulative result of these challenges is a growing gap between water demand and water supply availability, especially from federal water projects. In response states, cities and water districts throughout the West that have traditionally relied on federal water projects have made their own significant investments in water use efficiency and water resource infrastructure.

For example, in the Sacramento region, local agencies have undertaken significant re-engineering of their water systems to account for falling water supply reliability from the Bureau's Central Valley Project (CVP). For many of our local districts, the CVP has traditionally been their only source of water supply; a supply upon which entire communities have been built. Indeed, these communities were promised reliable supplies from the CVP when Folsom Reservoir was constructed in exclusion of their own, locally owned facilities. In response to falling CVP water supply reliability, particularly during the last decade, these communities have had to implement a range of emergency actions to bolster supplies in order to maintain water service.

Through significant local investments, the Sacramento region have managed to keep our supply reliability intact, but the same cannot be said of much of the rest of California, particularly our agricultural sector, which has suffered heavy economic losses and in many instances, had to resort to unsustainable groundwater extractions to maintain minimum levels of service. Ironically, it was this same unsustainable use of groundwater which was the original impetus for constructing the CVP. California requires a functional and stable presence of federal water projects in order to keep our communities and farms safe from floods and supplied with reliable water supply in order to keep our local economies healthy.

Framework for Federal Action

Even with vigorous local action, the growing gap between supply and demand cannot be fully addressed without committed action by Congress through Reclamation, the Corps of Engineers and the federal resource agencies. I believe a renewed commitment to federal water projects throughout the West can be undertaken in a manner that promotes job growth and local economic development.

Working in partnership with local communities, federal agencies can operate and maintain existing federal infrastructure as well as expand our water resource portfolio and return to higher levels of water supply reliability for our farms and cities. These actions fall into several important categories:

Public Safety. Dam Safety, Flood Damage Reduction. Reclamation has implemented a very robust, risk-based dam safety program. The Corps likewise continues to formulate and implement an enormous flood damage reduction program nationwide. The Joint Federal Project (JFP) at Folsom Dam in California represents the best of both programs. Working together, Reclamation and the Corps developed an integrated project that accomplishes the Corps' flood damage reduction objective and mitigates Reclamation's dam safety risks at Folsom. In doing so, the two agencies saved nearly \$2 Billion when compared to three separate authorized projects. Reclamation projected the dam safety and flood control work at Folsom would create 3,000 private sector construction jobs and 6,000 jobs for suppliers and service providers over a 10-year period. The JFP should be the model for meeting high priority federal projects while providing jobs and contributing to local economic development.

Congress should continue federal appropriations at current levels to address high priority dam safety and flood control risks. Consistent with the JFP model, agency appropriations should require Reclamation to contract with private industry for all principle engineering and construction associated with these projects.

Facility Reliability. The majority of federal multipurpose water projects in the West are 60 – 80 years old or more. The backlog of Major Rehabilitation and Replacement (MR&R) for Reclamation facilities is accumulating far beyond funding appropriated through the annual budget process. Reclamation's MR&R program involves large, capitalized additions or replacements to existing facilities, and does not include backlog of deferred maintenance for routine operation and maintenance. Reclamation's 2015 Infrastructure Investment Strategy Report estimated MR&R requirements for reserved and transferred works at \$3 Billion on average. Conversely, appropriations for Reclamation's Replacements, Additions and Extraordinary Maintenance (RAX) program – which is historically been used to fund MR&R projects for reserved works - have been gradually reduced Reclamation-wide to less than \$50 million annually. Over time, delays in maintenance and repair have the effect of reducing reliability of the system and increasing public safety risks.

For example, lack of funding to address canal subsidence in Central Valley Project conveyance facilities has diminished Reclamation's capability to deliver project water to South of Delta water contractors even in average hydrology years. Closer to home, Reclamation has been unable to secure funding necessary to complete design and install an alternate Municipal and Industrial (M&I) Intake at Folsom Dam. The alternate intake is critical to ensuring continued deliveries to local communities during extreme drought conditions as we recently experienced.

As a basic step toward addressing the growing risk to system reliability, Congress should significantly increase appropriations under existing program authorities to address Reclamation's backlog of MR&R projects. Consistent with the JFP model, agency appropriations should require Reclamation to contract with private industry for all principle engineering and construction associated with these projects.

It is important to note that pursuant to Reclamation law, appropriations expended by Reclamation for MR&R and regular O&M of water supply and hydropower generation infrastructure is reimbursable by project water and power contractors. For example: for the CVP, approximately 80% of capital and O&M costs are recovered from CVP contractors.

Regulatory Streamlining and Environmental Sustainability. Western citizens have a strong connection to the land, and we as water managers are charged with maintaining both healthy water supplies and healthy ecosystems. While federal and state environmental laws sometimes provide useful regulatory backstops, regulatory outcomes based on single species management have consistently proven to be less useful in recovering ecosystem communities than landscape level planning efforts. I believe that applying laws such as the Endangered Species Act in much more integrated ways, using local agencies to implement projects in partnerships with state and federal managers, will lead to far better outcomes for maintaining healthy economies and ecosystems.

This model can work. In the Sacramento Valley, some of the most effective fish and wildlife species recovery projects have been initiated, led, and completed by local agencies. These agencies and local landowners and municipalities are nimble entities that can identify, fund and construct ecosystem enhancement projects expeditiously with very efficient cost models. More of these efforts are needed to meet our coequal goals of water supply reliability and ecosystem functionality and Congress can help by directing federal agencies to streamline their environmental review and approval processes.

Federal Storage Capacity. There has been no significant increase in storage capacity for federal projects in California since the early 1980's (New Melones Dam and Reservoir). In 2004 Congress enacted the Bay Delta Act (P.L. 108-361) which authorized Reclamation to conduct feasibility studies for enlargement of Shasta Dam, and for the proposed Sites Reservoir and Upper San Joaquin Storage Projects (Temperance Flat Reservoir).

Reclamation completed the Feasibility Report and Final Environmental Impact Statement for the Shasta enlargement in 2015. Reclamation and the Department of Interior concluded that the Net Economic Development (NED) Plan is projected to be technically feasible assuming cost share by non-federal partners. The Temperance Flat and Sites Reservoir studies are in progress.

The recently enacted Water Infrastructure Improvements for the Nation Act” (WIIN) (Public Law 114-322) authorizes the Secretary of the Interior to enter into agreements with non-federal partners for design and construction of federally owned and State led storage projects in California.

If Congress is serious about expanding surface water storage in California and throughout the West, and that same time create jobs and economic development, it should direct Reclamation to move expeditiously to complete cost share agreements with non-federal partners and appropriate monies to fund the federal share of such agreements as they are completed.

Technical Assistance. Basin Studies conducted by Reclamation advocate increased regional self-sufficiency as a strategy by local agencies for dealing with reduced federal project water supply. Adaptation strategies identified through these studies include, but are not limited to increased conjunctive use, water banking, and intra-basin transfers. Although local agencies have made significant progress in this regard, it is still not enough meet future demands. Further development of local surface and groundwater storage and conveyance facilities and other opportunities for regional self-reliance, requires planning, modeling and other technical assistance by Reclamation. Unfortunately, funding for this critical technical assistance continues to be constrained Reclamation-wide to only \$2 million annually. Despite requests from local CVP contractors to increase this amount, Mid-Pacific Region typically funds the technical assistance program at less than \$200,000.

Congress should expand funding for Reclamation’s General Planning program in order to allow local agencies to begin to replace lost federal water project reliability and integrate local and federal projects. To further encourage regional self-reliance and reduce demands on the federal projects, Congress should simultaneously maximize appropriations in support of Reclamation’s WaterSMART program and other financial assistance authorities.

Transparency. Reclamation Policies and Directives and Standards require Regional Offices to engage project water and power contractors in formulation of Reclamation policies that may impact them. Other Policies and Directives and Standards require Regional Offices to involve water and power contractors in the budget formulation process, on the basis that contractors are the paying customers. In the press of business, Reclamation has gradually devolved away from those requirements and is tending instead to articulate policies and decide key budget priorities without substantive communication or coordination with contractors. In some cases, this has had a detrimental effect. For example: without any prior communication, Reclamation announced several unwritten policies in 2016 that constrained renewal of long-term CVP water service contracts, regardless of statutory mandates for renewal. Should that stand, PCWA and a minority of other M&I contractors, would be consigned to two-year interim renewal contracts for an indefinite period.

Congress can help by directing Reclamation to conform to agency policies for customer involvement; and to honor statutory mandates and long-standing contractual obligations for ensuring certainty in contract water supply.

Summary and Conclusion

The United States has made a major investment in water and power infrastructure in the West. Increasing demands and fluctuating cycles of drought and flood are placing an increased burden on those facilities. In addition, compliance with evolving environmental regulations has had the effect over time of reducing project supply available to farms and cities. While we have made great strides with ecosystem restoration and enhancement, we have yet to replace lost water supply reliability and build the new water and electricity infrastructure necessary to serve a growing population and a rapidly changing economy. I believe that most Americans want to live in a nation that enjoys a vibrant economy, a healthy ecosystem and a reliable water supply.

As important as it is to build new and improved infrastructure to provide for our future needs, it is equally important to operate and maintain the facilities that we already enjoy. Water and power infrastructure that is operating at peak efficiency serves its customers well and those customers will pay the costs of delivering reliable water and power. When it comes to Bureau of Reclamation and Army Corps of Engineers infrastructure in the West, Congress has the responsibility to appropriate adequate monies, to be repaid by users, to assure reliable delivery of water and power.

Finally, it is important to understand that access to water and power is the lifeblood of the west; from energy intensive technology applications to summer gardens in citizens' backyards, we must have reliable sources of water and energy to grow our economies and families. Local agencies our doing our part to be part of the solution, I urge Congress to hold up its end of the bargain to keep the West a dynamic part of the United States' economy.



Testimony of
Jonathan C. Kaledin
Executive Vice President/General Counsel
Natural Systems Utilities

Subcommittee on Water, Power and Oceans
Committee on Natural Resources
“Modernizing Western Water & Power Infrastructure in the 21st Century”
March 1, 2017

Greetings Subcommittee Members:

I’m Jonathan Kaledin, the EVP/GC of Natural Systems Utilities, or NSU. NSU is headquartered in NJ and has regional offices in MA, MN, and CA. We are a distributed (i.e., non-centralized) water and wastewater system company, and our current focus is on water reuse systems.

I’ve worked on water infrastructure issues for 30 years now—for the government, for NGOs, and in the private sector. As a result of my work in these three sectors, I’ve got a multi-dimensional perspective on our water infrastructure needs. Attached to my testimony is a 12 slide power point presentation; I’d like to highlight some of the slides during my oral testimony today.

Let me start by saying that I’ve been working on and writing about our national water infrastructure since the 1990s. Some of my first work in the field was on our clean water (both water supply and wastewater) financing needs—my “status of U.S. infrastructure” slide is not telling us anything new; we’ve had perennial problems with our water infrastructure—the funding of it and its quality—for decades now. Note in this slide, however, that two of the states with the largest 20 year needs are western states (west of the Mississippi River): Texas and California.

I want to focus in on two things from the title to today’s hearing: “modernizing” and “21st Century.” While related they don’t mean the same thing: just because we are in the 21st Century doesn’t mean that we necessarily have to choose approaches to water infrastructure that I would characterize as “modernizing.” Doing so, however, is absolutely critical to ensuring that we accomplish and maximize our economic, social, and environmental goals when it comes to water.

“Modernizing” our Western Water Infrastructure

There are four principles that need emphasis in regard to modernizing our western water infrastructure in the 21st century:

1. Don't “build your own, or another, dinosaur.”
2. Determine and make available the “right water for the right use.”
3. When it comes to water, “use it more than once.”
4. Recognize that “green water infrastructure” is critical to our future.

I am convinced that the successful application of these four principles will allow us to modernize our water infrastructure this century in economically efficient, effective ways, and in ways that not only create many so-called “infrastructure” jobs, but will allow state and local economies to thrive by keeping water and wastewater costs down while establishing the stability needed in communities to have their businesses succeed. In addition to the economic benefits associated with these principles, their adoption also allows us to accomplish our social (water for all) and environmental (water outside of an anthropomorphic context) goals. Finally, they will allow us to build more resilient systems than our water systems of the past, and as the 21st century brings climate change with it, such resiliency is an imperative.

Don't Build Your Own Dinosaur

The concept of not “building your own, or another, dinosaur” challenges the notion that the answer to all of our water infrastructure needs lies in the huge, centralized, and by and large linear water supply and wastewater systems of last century. Much of the country's prosperity and growth can be attributed to the development of large water supply and wastewater systems, but these systems—our dams, our major city systems, our large scale irrigation projects—are not “modern” in any sense of the word nor need to be thought of and relied upon as the central focus of our 21st century water infrastructure.

Although the focus of today's hearing is on western water infrastructure, let me “pick on” a city in the East—Boston—for a minute. Slide 6 in the accompanying power point presentation depicts Boston's “dinosaur” of a water infrastructure system: a huge, hugely expensive, and almost completely linear system that brings water into the metropolis from close to 100 miles away, and then once it is used discharges it almost 10 miles out into Massachusetts Bay.

Once these enormous water infrastructure systems are built, it takes decades to pay for them, almost always through increases in water and sewer rates. In Boston, water use has dropped, so the system finds itself looking for ways to increase revenue through additional water sales to communities and retail customers. When I worked for the federal government in the late 1980s I was part of the federal team overseeing the “Boston Harbor cleanup,” the multi-billion dollar modernization of the metropolitan area's wastewater system. During the design stage of the project, the Director of the Charles River Watershed Association came to see some of us, and proposed that we build a series of smaller wastewater facilities around the region, rather than one enormous (one of the world's largest) facility located on Boston Harbor. I remember thinking at the time “what a strange and silly idea.”

Now I know that the idea was a prescient one—insight into how not “building your own dinosaur”—huge and expensive water infrastructure projects such as dams or enormous, centralized wastewater or water supply facilities--allows for future adaptability and much greater flexibility in regard to meeting future water needs. If Boston had built a series of small facilities rather than a single large system, arguably it would not have a situation on its hands where declining or flat revenue was a real concern for its water infrastructure.

This same exact story could be told about the great, centralized water infrastructure systems that serve Phoenix, or San Diego, or Los Angeles, or Seattle, or numerous other western municipalities, large and small. The issue is one of careful planning as to what are the most economically efficient ways of meeting our future water needs. “Modernizing” our western water infrastructure in the 21st century unquestionably means first taking a long hard look at determining what our true needs are, and second, analyzing if there are better—cheaper, more adaptable, quicker, more multi-dimensional--alternatives to the large centralized water projects that defined the last century.

Right Water for the Right Use

The “right water for the right use.” What does this mean, and how should this principle underlie the “modernization” of our “21st century” water infrastructure?

As our water systems in the 20th century were developed, we adopted a “one size fits all” approach to how we used our water. As a result, we now treat and deliver, and at significant cost, potable water for use where potable water is not needed. Slide 7 of the accompanying power point presentation gives a glimpse of this: why are we watering are lawns, and our crops, with drinkable water? Why are we using potable water in our toilets—we all know dogs or cats that lap from the toilet—if the ceramic or plastic is clean enough, so could we, since the water in our toilets is almost always drinkable.

Modernizing our water infrastructure in the 21st century simply has to include building water infrastructure that allows us to be much much more discriminating in regard to matching the quality of water we use to the need itself. In the west, where water supply—quantity--is often the predominant issue as opposed to the quality of water, it is almost insane to treat water to drinkable standards and then use it for purposes for which less high quality water would do.

Unless our investment in modernizing our western water infrastructure takes this issue fully into account, planning for and then implementing a whole new paradigm regarding the “right water for the right use,” we will have failed to bring western water infrastructure into the 21st century. Strong words, but unquestionably so; and there is a true leadership role for the federal government to play on the issue of the “right water for the right use.” Our federal regulatory apparatus needs to be tweaked (not dismantled or otherwise harmed) so as to allow for the development of water infrastructure aimed at making available the “right water for the right use,” and federal funding needs to be made available for such systems just as much as it is made available for more conventional water infrastructure.

Use It More Than Once

The cyclical principle—“use it more than once”—also needs to be adopted fully into modernizing our western water infrastructure in the 21st century. To a certain extent, it is already in effect—naturally so. The Colorado River (including its tributaries—see Slide 5) is used many times as it wends its way from Wyoming down to the Gulf of California. Water is taken out for water supply purposes and treated wastewater put back into it many times during its voyage to the sea, so it is indeed “used more than once.” This is the case with virtually all of our rivers of any substance.

But “use it more than once” in regard to modernizing our western water infrastructure really has a different meaning to it—a meaning that incorporates both the concept of “not building your own dinosaur” and the concept of “the right water for the right use.” Part of our modernized water infrastructure has got to involve breaking the linear approach to water management—look at the linear quality to the Boston system (slide 6)—and using water cyclically. For example, treating wastewater to non-potable but safe standards, from a health perspective, and then using it to water lawns and crops, is an example of the “use it more than once” principle that needs full adoption this century.

Western communities are already well on their way to putting the “use it more than once” principle into full effect. Orange County’s (CA) replenishment of its aquifers with treated wastewater is one of the best known examples; the County pumps treated wastewater into discharge wells for two purposes—to prevent saltwater from intruding into its drinking water aquifer, and also to allow treated wastewater to be treated further naturally and recharge the drinking water aquifer. This is known as indirect potable reuse of water. Another example of it is in San Diego, where treated wastewater is being added to the City’s reservoirs. There is already direct potable reuse of water—the treatment of wastewater to a standard that allows it to be used directly for drinking water and other potable purposes occurring in the West, in Texas, in the communities of Big Springs and Wichita Falls.

What is important to note regarding the “use it more than once” principle is that it can be championed at many levels and within many different contexts as part of the modernization of our western water infrastructure. Two of the examples above show communities and counties—Big Springs, TX and Orange County, CA—embracing “use it more than once.” It is a principle, however, that can be brought down to the in-building and district size level, however, which is the space that NSU operates within. We design, build, and operate water reuse systems at a much smaller level than the previous examples. Slides 10-12 give an example of one of our in-building water reuse systems; these systems result in non-potable water being available for landscaping, toilets, laundry, and cooling tower purposes, which in turn results in 50-60% less water being used by a building—coming in and being discharged.

Rather than establishing expensive “traditional” new water supply infrastructure such as well fields, dams, and desalinization plants, one can argue that one of the smart and truly cost-effective ways of bringing our water infrastructure into the 21st century is to adopt fully and aggressively the “use it more than once” principle to developing water infrastructure.

Green Infrastructure

Finally, the last principle that needs to be adopted in regard to modernizing our western water infrastructure is the principle that “green infrastructure” needs to be a critical component of it—“green” is the color of the 21st century.

Our knowledge about what is efficient and effective in meeting our water supply and wastewater needs has grown exponentially through the decades, and will continue to do so. While in generations past, we thought that hard structured, highly engineered approaches to all of our water supply and wastewater needs was the right way to go, over the past 20 years or so there has been a growing recognition and acceptance of the fact that approaches that adopt natural means have much to offer.

Slide 9 shows what a City that fully adopts a number of different “green infrastructure” approaches into its overall water infrastructure might look like. Athletic fields that double as storm water retention facilities; green roofs; storm water swales that also have solar energy components to them, and much more. Wetlands are now being used as “green infrastructure” for both wastewater treatment purposes and stormwater control, and preserving land in its natural state that surrounds or is on top of our water supplies—watershed land—is now an active and integral part of water infrastructure planning and development.

What is critical to note about using “green infrastructure” approaches to modernizing our water infrastructure in the 21st century is that such approaches are not just out-of-the-mainstream desires of the environmental community anymore. The economics of “green infrastructure” approaches have been analyzed and developed in sophisticated, reliable ways in recent years, and the health and environmental benefits of such approaches compared and analyzed carefully against highly engineered, technical water infrastructure approaches. We now know that “green infrastructure” often can work as effectively and efficiently as traditional infrastructure, and that there can be compelling reasons for adopting its use.

In closing, let me address briefly the modernization of our western water infrastructure and the issues of climate change and resiliency. While there may be climate change skeptics--whose views need to be acknowledged—it is pretty clear that 21st century water infrastructure development must take into account increased climate variability and the fact that modernizing our water infrastructure must account for increased resiliency within these systems. Increased climate variability, and the need for increased resiliency within our modernized water infrastructure, truly require that we rethink our approaches to such infrastructure.

One of the keys to the future, I believe, lies in adopting a smaller approach to sizing our water infrastructure overall, and adopting as cyclical an approach to water infrastructure as is possible. Both are at the root of the four principles set forth above.

Thank you. It has been a real pleasure presenting to you.

TESTIMONY OF ROBERT S. LYNCH,
ROBERT S. LYNCH & ASSOCIATES,
BEFORE THE HOUSE COMMITTEE ON NATURAL RESOURCES,
SUBCOMMITTEE ON WATER, POWER AND OCEANS, OVERSIGHT HEARING
ENTITLED “*Modernizing Western Water and Power Infrastructure in the 21st Century*”

HOUSE OF REPRESENTATIVES, WASHINGTON, D.C.

MARCH 1, 2017

Chairman Lamborn, Ranking Member Huffman, Members of the Subcommittee, I am pleased to have the opportunity to present testimony on a number of topics that the title of this hearing invites.

Our firm, among other clients, represents a state association, the Irrigation & Electrical Districts’ Association of Arizona (IEDA). Numbered among its 24 members are most of the special districts that manage water and electrical systems in Arizona as well as several of the municipalities that provide electrical service to their citizens. As such, our members are in frequent contact with the Western Area Power Administration (WAPA) and the U.S. Bureau of Reclamation (Reclamation). They experience first-hand the problems in dealing with federal agencies with overly complicated regulations and guidelines and the accompanying lack of transparency that impedes progress. Modernizing water and power programs related to these agencies clearly is an appropriate subject in these changing times and worthy of this Subcommittee’s attention.

Reclamation Small Hydropower Licensing Program

First, let me mention a modernization this Subcommittee has already produced, albeit with mixed results. Section 9(c) of the Reclamation Project Act of 1939 has authorized Lease of Power Privilege at Reclamation facilities for over a half a century. When we first began exploring ways to make that process more useful for small hydro (5 megawatts and below), Reclamation had only exercised that authority nine (9) times. Once this Subcommittee’s efforts began to address that very streamlining, Reclamation responded with Directives and Standards on this subject (guidelines to its own employees) that outlined the very bureaucratic morass the legislation sought to avoid. The legislation accomplished its task and the President signed it on August 9, 2013. Reclamation responded by detailing the person that should have been managing the program to Grand Coulee Dam for a year and a half. Reclamation has still not lived up to the promise this bill presented. For example, the Department of Energy did a study of just the State of Colorado and identified enough sites at 5 megawatts and below to install 1,400 megawatts of capacity. That is the nameplate capacity of Glen Canyon Dam. That possibility has not been realized. Reclamation’s sister agency, the Federal Energy Regulatory Commission (FERC), received similar streamlining authority on a bill signed the exact same day. It has outstripped Reclamation in implementing its new authority. There is no reason I can think of why Reclamation does not focus more effort on this obviously beneficial program. It develops small sources of clean renewable hydropower in systems that already exist with essentially no environmental impact whatsoever.

Reclamation Transparency

I want to thank Congressman Gosar and tangentially Senator Barrasso for continuing to push on the Reclamation transparency legislation. I note they have introduced companion bills this year and I think it is essential that Reclamation have guidelines for reporting aging infrastructure, both as to its reserved works and to its transferred works. In investigating this issue, we found out that Reclamation could assemble aging infrastructure information about its reserved works but did not at the time categorize it in that fashion. But Reclamation had the information. What was lacking was information about transferred works, that is federally-titled facilities being managed by water users associations or irrigation districts under Reclamation law. Those facilities are not only managed by the customers but are maintained at their expense. Reclamation has not asked for data nor kept records on that maintenance. There are going to be situations where something happens that creates a sufficiently large dollar need that it may be beyond the ability of these customer organizations to finance. Perhaps the Subcommittee could consider a way that these transferred works needs could be reported to Reclamation to be folded into budget requests and therefore promote reporting aging infrastructure at transferred works by offering the possibility of financial assistance to the facility operators.

Alternative Financing

There have been a number of suggestions about finding alternative sources for Reclamation to address its aging infrastructure issue. Reclamation has consistently reported to Congress that it has something in the order of between \$1 billion and \$3 billion of aging infrastructure backlog that needs to be addressed. Finding a source of financing for that effort beyond the appropriation process is something worth considering. Most importantly, however, if these funds, when identified, are going to be spent wisely, we recommend that the authority to acquire these funds be sourced through the project customers who, in turn, would contract with the agency for the work involved. Doing so would make the customers equal partners with Reclamation to get the necessary work done, provide oversight and collaboration in that effort, and insure that the funds were spent wisely and were providing the benefits to the people who are supposed to benefit from them.

Removing Barriers

There is a provision in Reclamation law called the Hayden-O'Mahoney Act passed in 1937. Certain power facilities authorized under the Townsites Act of 1920 were about to be paid off and the continuing revenues from them were literally up for grabs. Many of the districts thought they would benefit but the Reclamation Fund was in trouble and the senators decided that these ongoing revenues should go back into the Reclamation Fund for the benefit of the projects where they were installed. The problem is that, the way the bill was written, it only applied to contracts that were in place at the time. That has been confirmed by two Tenth Circuit Court of Appeals opinions turning aside irrigation district attempts to use the Act. This is a tool that could be used now and possibly help finance small hydropower under the streamlined authority that Congress has given Reclamation. A few simple word changes in the statute would make it prospective instead of retrospective and once again become a useful tool in the Reclamation arsenal. We would be pleased to work with the Subcommittee in developing that language.

Federal/State Water Controversies

It is no secret that, from time to time, various federal agencies, especially the Forest Service, have made efforts to play a role in the management of surface waters and ground waters that are subject to state law and have additionally begun efforts to use the Clean Water Act as an adjunct to that effort. The surface water controversy produced a bill sponsored by Congressman Tipton that passed the House easily in a previous Congress but did not go further. This latest controversy is just that, the latest controversy. I was personally involved in this general controversy between federal and state rights to water and claims by federal land management agencies in the 1970s, again in the 1980s, and again in the 1990s. That third flare-up caused Congress to create the Congressional Water Rights Task Force on which I was pleased to serve with an attorney from Colorado, Bennett Raley, who later became Assistant Secretary for Water and Science in the Bush Administration in the 2000s. We filed a report, the agency backed off, nothing else happened. They came back. Hence the Tipton bill. While the Tipton bill may very well need to be reconsidered, and we would be pleased to assist in doing that, there is an underlying problem with regard to the Appropriation Doctrine, on the surface water issue, that is serious enough and complicated enough that it really cannot be articulated in detail here. It is the precipitating cause for much of these federal/state water controversies and another issue we believe would be worthy of this Subcommittee's attention.

Western Area Power Administration Issues Financing

Turning to the power side of the equation that we deal with on a daily basis, one of the central issues facing the Western Area Power Administration (WAPA) is the need for additional transmission and serious upgrading of existing facilities. Congress has recognized that this need exists, not once but twice. In Section 1222 of the Energy Policy Act of 2005, WAPA is given authority to receive money from others for facilities that meet certain requirements and to jointly own facilities that result from this effort. The joint ownership issue is very significant because that is not something that WAPA can do otherwise. The statute itself was written in haste. Indeed, I had a hand in writing a portion of it and things written in haste often are things you can live to regret. Whether it is worth salvaging I cannot say but the concept of how WAPA can hold facilities in which it is not a total owner is worthy of this Subcommittee's attention. I know that the National Association of Regulatory Utility Commissioners (NARUC) is not a fan of this statute because it believes that it emasculates state jurisdiction over line siting. That is a legitimate concern and one that I have faced within the last month in a line siting process in Arizona. Nevertheless, looking at this more closely may be in order.

Another Congressional response is the Transmission Infrastructure Program (TIP) inserted into the American Recovery and Reinvestment Act of 2009. I know of only one successful project under that program accomplished by WAPA and that is the Palo Verde to ED5 line in central Arizona. In my view, that succeeded because our people put together a Joint Action Agency to help clear barriers and answer unanswered questions to insure that this project got built. It is a successful project and WAPA is entitled to be proud. The fact that it stands out like that is the problem. Here again, the TIP program could be clarified in a way that might make it more attractive to more of WAPA's customers who would help participate in additional upgrading and other activities that improve WAPA's 17,000 miles of transmission system. The

essential ingredient in success, as demonstrated by Palo Verde to ED5, is customer involvement. If the TIP program insured that WAPA customers were essential to sourcing the funds for the improvements that they would ultimately pay for anyway, a partnership that made sense and focused on the real world would be created to the benefit of both the agency and the customers.

If there is a theme to my discussion of WAPA issues, it is that Congress can facilitate and streamline certain processes that make agency/customer partnerships easier to construct, easier to implement and more efficiently cost controlled. The power customers are self-motivated to work on systems on which they depend and equally self-motivated to be concerned about the costs because they will be paying them. There are other related issues in the WAPA/customer relationship that bubble up from these kinds of discussions but I will leave it at this for now.

Thank you for the opportunity to appear here today. If there is anything else we can do to assist you in furthering your agenda, please do not hesitate to ask.